APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,669	05/03/2005	Yoshiyuki Okimoto	2005_0767A	6228

513   7590   07/16/2009
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EXAMINER
SAINT CYR, LEONARD

ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
07/16/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/533,669	OKIMOTO, YOSHIYUKI
	Examiner	Art Unit	
	LEONARD SAINT CYR	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>21 April 2009</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-29</u> is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-29</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>03 May 2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a)☐ All b)☐ Some * c)☐ None of:

  1.☐ Certified copies of the priority documents have been received.

  2.☐ Certified copies of the priority documents have been received in Application No. _____.

  3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed 04/21/09 have been fully considered but they are not
persuasive.

        Applicant argues Lekutai fails to disclose a vocabulary storage unit which stores,
as the speech recognition dictionary, the generated abbreviated word together with the
recognition object and an utterance probability of the abbreviated word based on either
the generated rule or ease of pronunciation of the abbreviated word (Amendment,
pages 14, and 15).

        The examiner disagrees, and points out, that limitation is rejected in a
combination of Lekutai and Hiroyuri et al. Lekutai teaches a vocabulary storage unit
which stores, as the speech recognition dictionary, the generated abbreviated word
together with the recognition object, since discloses "**a memory configured to store an
abbreviation library, wherein the abbreviated text string is produced based on the
abbreviation library.** In additional examples, the text processor comprises **a memory
configured to store a rule library, wherein the abbreviated text string is produced
based on the rule library**" (paragraph 5). And Hiroyuri et al., teach storing an
utterance probability of the abbreviated word based on either the generated rule or ease
of pronunciation of the abbreviated word, since disclose "**utterance probability
computed by having used at least one of analysis likelihood, reading
likelihood**…and the key word dictionary collated results for a recognized vocabulary

which becomes in each above-mentioned utterance unit is given and registered into the

above-mentioned lexical memory measure" (paragraph 16).

      Thus, Lekutai in view of Hiroyuri et al., teach all parts of the limitation.

      Applicant argues that neither Lekutai nor Hiroyuri et al., teach an abbreviated

word generation unit which generates an abbreviated word of a recognition object,

based on a generation rule, out of candidates including the abbreviated word of the

recognition object generated by concatenating parts of the constituent words

(Amendment, page 15).

      The examiner disagrees, since Lekutai discloses "a memory configured to store

an abbreviation library, **wherein the abbreviated text string is produced based on

the abbreviation library.** In additional examples, the text processor comprises a

memory configured to store a rule library, **wherein the abbreviated text string is

produced based on the rule library**…As a specific example of an abbreviation

process, the message **"MEET ME AT 6:00 PM AT DOWNTOWN OFFICE BUILDING"**

can be shortened based on abbreviations in the standard library 154 and/or one or both

of the user-customized libraries 156, 158. For example, this message can be shortened

to **"MEET 6P, DWNTWN OFF BLDG,"** substantially reducing message length"

(paragraph 5; paragraph 29, lines 1 – 6).

Claim Rejections - 35 USC § 102

2.   The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3.   Claims 24, 25, and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Lekutai (US PAP 2005/0240391).

As per claim 24, Lekutai teaches a speech recognition dictionary creation method for creating a speech recognition dictionary, using a speech recognition dictionary creation device including an abbreviated word generation unit and a vocabulary storage unit, said method comprising: (paragraph 35):

generating, with the use of the use of the abbreviated word generation unit (see example of paragraph 29), an abbreviated word of a recognition object that includes one or more constituent words based on a rule that takes into account ease of pronunciation ("enhance readability"; paragraphs 29, and 33, lines 1 - 6); and

registering, into the speech recognition dictionary, the generated abbreviated word, using the vocabulary storage unit, together with the recognition object ("a memory configured to store an abbreviation library"; paragraph 5).

As per claim 25, Lekutai further discloses that the one or more constituent words includes a plurality of constituent words, and the method further comprises: dividing the recognition object into the constituent words; generating mora strings of the constituent words based on readings of the recognition object ("enhance readability"), wherein in said generating of the abbreviated word, the abbreviated word including one or more

moras is generated by extracting one or more moras from the mora strings of the

constituent words and concatenating the extracted moras based on the mora strings of

the respective constituent words generated by said mora string generation unit (see the

abbreviation process example; paragraph 29, lines 1 – 6; paragraph 33; Abstract).

As per claim 28, Lekutai further disclose a program for a speech recognition

dictionary creation device that creates a speech recognition dictionary, said program

causing a computer to execute the steps included in the speech recognition creation

method according to claim 24 (paragraph 31)

Claim Rejections - 35 USC § 103

4.   Claims 1 – 23, 26, 27, and 29 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Lekutai (US PAP 2005/0240391) in view of Hiroyuri et al., (JP 2002-

041081).

As per claim 1, Lekutai teach a speech recognition dictionary creation device for

creating a speech recognition dictionary, said device comprising:

an abbreviated word generation unit operable to generate an abbreviated word of

a recognition object that constituent words, based on a generation rule, out of

candidates including the abbreviated word of the recognition object generated by

concatenating one of: the constituent words into which the recognition object is divided

and which are not adjacent each other, and parts of the constituent words into which the

recognition object is divided (**"the abbreviated text string is produced based on the abbreviation library…"** paragraph 5; paragraph 29, lines 1 – 6);

a vocabulary storage unit which stores, as the speech recognition dictionary, the generated abbreviated word together with the recognition object (**"a memory configured to store an abbreviation library, wherein the abbreviated text string is produced based on the abbreviation library"** (paragraph 5).

However, Lekutai does not specifically teach an utterance probability of the abbreviated word based on either the generated rule or ease of pronunciation of the abbreviated word.

Hiroyuri et al., teach that **utterance probability computed by having used at least one of analysis likelihood, reading likelihood**…and the key word dictionary collated results for a recognized vocabulary which becomes in each above-mentioned utterance unit is given and registered into the above-mentioned lexical memory measure" (paragraph 16).

Therefore, it would have been obvious to one of ordinary skill in the art the time the invention was made to generate abbreviated words based on different candidates as taught by Hiroyuri et al., in Lekutai, because that would help correctly recognize partial character strings uttered by users (paragraph 14).

As per claim 2, Lekutai further discloses that a word division unit operable to divide the recognition object into the constituent words; and a mora string generation unit operable to generate mora strings of each constituent word in the constituent words

based on readings of the recognition object ("enhance readability"), wherein said
abbreviated word generating unit is operable to generate the abbreviated word including
one ore more moras by extracting one or more moras from the mora strings of the
constituent words and concatenating the extracted one or more moras based on the
mora strings of the constituent words generated by said mora string generation unit (see
the abbreviation process example; paragraph 29, lines 1 – 6; paragraph 33; Abstract).

As per claim 3, Lekutai further discloses that said abbreviated word generation
unit includes: an abbreviated word generation rule storage unit operable to hold a
generation rule for generating an abbreviated word using moras; and an abbreviated
word determination unit operable to determine an abbreviated word for final generation,
by applying the generation rule held by said abbreviated word generation rule storage
unit ("a memory configured to store an abbreviation library.. rule library"; paragraph 5).

However, Lekutai does not specifically teach a candidate generation unit
operable to generate candidate abbreviated words, each including one or more moras,
by extracting one or more moras from the mora strings of the respective constituent
words and concatenating the extracted one or more moras.

Hiroyuri et al., teach a reading grant means to give reading to each composition
word divided, and to output all the **reading candidates**. Analysis likelihood of an
analytical candidate in whom each generated utterance unit exits, the above-mentioned
reading likelihood of an **analytical candidate** in whom each above-mentioned utterance

unit exits, and each above mentioned utterance unit, the **number of Maura** of each above-mentioned utterance unit (paragraph 13, lines 1- 7, paragraph 15).

Therefore, it would have been obvious to one of ordinary skill in the art the time the invention was made to generate abbreviated words based on different candidates as taught by Hiroyuri et al., in Lekutai, because that would help correctly recognize partial character strings uttered by users (paragraph 14).

As per claim 4, Lekutai in view of Hiroyuri et al., further disclose wherein said abbreviated word generation rule storage unit is operable to hold a plurality of generation rules (Lekutai; paragraph 5);

said abbreviated word determination unit is operable to calculate a likelihood under each of the generation rules stored in said abbreviated word generation rule storage unit and to determine an utterance probability by comprehensively taking into account the calculated likelihoods, the utterance probability being determined for each of the generated candidate abbreviated words, and said vocabulary storage unit is operable to store the abbreviated word and the utterance probability that are determined by said abbreviated word determination unit (Hiroyuri et al., "likelihood showing a probability"; paragraph 15).

As per claim 5, Lekutai in view of Hiroyuri et al., further disclose that said abbreviated word determination unit is operable to determine the utterance probability

by summing up values that are obtained by multiplying the likelihoods for the generation

rules by corresponding weighting factors (see equation 6; Hiroyuri et al., paragraph 91).

As per claim 6, Lekutai in view of Hiroyuri et al., further disclose that said

abbreviated word determination unit is operable to determine that a candidate

abbreviated word is the abbreviated word for final generation in the case where the

utterance probability of the candidate abbreviated word exceeds a predetermined

threshold ("predetermined value"; Hiroyuri et al., paragraph 100).

As per claim 7, Lekutai in view of Hiroyuri et al., further disclose said abbreviated

word generation rule storage unit is 10 operable to hold a first rule concerning

dependency relationship between words, and

said abbreviated word determination unit is operable to determine, based on the first

rule, the abbreviated word for final generation from among the candidates ("vocabulary

which presents the score beyond a higher rank predetermined value"; Hiroyuri et al.,

paragraph 100).

As per claim 8, Lekutai in view of Hiroyuri et al., further disclose the first rule

includes a condition that an abbreviated word should be generated using a modifier and

a modified word as a pair ("message text is abbreviated based on an abbreviation

library"; Lekutai; paragraph 10).

As per claim 9, Lekutai in view of Hiroyuri et al., further disclose the first rule includes a rule indicating a relationship between the likelihood and a distance between a modifier and a modified word that make up an abbreviated word ("analysis of likelihood which expresses the degree of a probability to all the division candidates"; Hiroyuri et al., paragraph 58).

As per claim 10, Lekutai in view of Hiroyuri et al., further suggest said abbreviated word generation rule storage unit is operable to hold a second rule that is related to at least one of a length of a partial mora string and a position of the partial mora string, the length being a length of the partial mora string that is extracted from a mora string of the constituent word when an abbreviated word is generated, and the position being a position of the partial mora string in the constituent word, and said abbreviated word determination unit is operable to determine, based on the second rule, the abbreviated word for final generation from among the candidates ("text length is shortened based on stored rules; Lekutai; Abstract).

As per claim 11, Lekutai in view of Hiroyuri et al., further suggest said second rule includes a rule indicating a relationship between the likelihood and a number of moras indicating the length of the partial mora string ("analysis of likelihood which expresses the degree of a probability to all the division candidates"; Hiroyuri et al., paragraph 58).

As per claim 12, Lekutai in view of Hiroyuri et al., further suggest that said second rule includes a rule indicating a relationship between the likelihood and a number of moras indicating a distance from a top of the constituent word to the partial mora string, the distance indicating the position of the partial mora string in the constituent word ("analysis of likelihood which expresses the degree of a probability to all the division candidates"; Hiroyuri et al., paragraphs 58, and 15).

As per claim 13, Lekutai in view of Hiroyuri et al., further suggest that said abbreviated word generation rule storage unit is operable to hold a third rule related to concatenated partial mora strings that make up an abbreviated word, and said abbreviated word determination unit is operable to determine, based on the third rule, the abbreviated word for final generation from among the candidates ("text length is shortened based on stored rules; Lekutai; Abstract).

As per claim 14, Lekutai in view of Hiroyuri et al., further suggest wherein the third rule includes a rule indicating a relationship between the likelihood and a combination of a last mora and a top mora, the last mora being included in a former of the concatenated two partial mora strings and the top mora being included in a latter of the concatenated two partial mora strings ("analysis of likelihood which expresses the degree of a probability to all the division candidates"; Hiroyuri et al., paragraphs 58, and 15).

As per claim 15, Lekutai further discloses an extraction condition storage unit operable to store a condition for extracting the recognition object from character string information that includes the recognition object ("speech recognition …before or after transmission"; paragraph 31);

a character string information obtainment unit operable to obtain the character string information that includes the recognition object; and a recognition object extraction unit operable to extract the recognition object from the character string information obtained by said character string information obtainment unit according to the condition held by said extraction condition storage unit, and to send to the extracted recognition object to said word division unit ("voice messages can be similarly processed… speech recognition …before or after transmission"; paragraphs 28, and 31, lines 1 – 6).

As per claims 16, 23, 26, 27, and 29, Lekutai further discloses recognizing an input speech by comparing the input speech with a model corresponding to a vocabulary registered in a speech recognition dictionary, said device comprising a recognition unit operable to recognize the speech using the speech recognition dictionary created by the speech recognition dictionary creation device.

Hiroyuri et al., teach the frequency of reading to each recognition sentence candidate likelihood which generates a recognition sentence candidate and is calculated from a language model using the extracted feature parameter. And the

recognition result has been obtained based on this language likelihood (paragraph 3, last five lines).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use language model in speech recognition system as taught by Hiroyuri et al., in Lekutai, because that would help calculate the likelihood of acoustic model for every phonemes (paragraph 99, lines 1 – 5).

As per claim 17, Lekutai in view of Hiroyuri et al., further suggest that the abbreviated word and the utterance probability of the abbreviated word are registered into the speech recognition dictionary together with the recognition object, and said recognition unit is operable to recognize the speech by taking into account the utterance probability registered in the speech recognition dictionary ("analysis of likelihood which expresses the degree of a probability to all the division candidates"; Hiroyuri et al., paragraph 58).

As per claim 18, Lekutai in view of Hiroyuri et al., further suggest that said recognition unit is operable (i) to generate a candidate for a recognition result of the speech and a likelihood of the candidate, (ii) to add a likelihood corresponding to the utterance probability to the generated likelihood, and (iii) to output the candidate as a final recognition result based on the resulting addition value ("vocabulary which presents the score beyond a higher rank predetermined value"; Hiroyuri et al., paragraphs 99, and 100).

As per claim 19, Lekutai in view of Hiroyuri et al., further suggest an abbreviated word use history storage unit operable to hold ("word frequency of occurrence"), as use history information, an abbreviated word recognized for the speech and a recognition object corresponding to the abbreviated word; and an abbreviated word generation control unit operable to control generation of an abbreviated word by the abbreviated word generation unit based on the use history information held by said abbreviated word use history storage unit ("number of Maura"; Hiroyuri et al., paragraph 16, lines 1 – 8).

As per claim 20, Lekutai in view of Hiroyuri et al., further suggest the abbreviated word generation unit of the speech recognition dictionary creation device includes: an abbreviated word generation rule storage unit operable to hold a generation rule for generating an abbreviated word using moras ("number of Maura"); a candidate generation unit operable to generate candidate abbreviated words, each being made up of one or more moras, by extracting one or more moras from the mora strings of the respective constituent words and concatenating the extracted moras ("analysis of likelihood which expresses the degree of a probability to all the division candidates"; Hiroyuri et al., paragraph 58; paragraph 16, lines 1 – 8); and

an abbreviated word determination unit operable to determine an abbreviated word for final generation, by applying the generation rule held by said abbreviated word generation rule storage unit to the generated candidate abbreviated word, and said

abbreviated word generation control unit is operable to control the generation of the
abbreviated word by making one of change, deletion, and addition to the generation rule
held by the abbreviated word generation rule storage unit (Lekutai; see the abbreviated
example"; paragraph 29, lines 1 – 6).

        As per claim 21, Lekutai in view of Hiroyuri et al., further suggest an abbreviated
word use history storage unit operable to hold, as use history information ("word
frequency of occurrence"), an abbreviated word recognized for the speech and a
recognition object corresponding to the abbreviated word; and a dictionary revision unit
operable to revise the abbreviated word stored in the speech recognition dictionary
based on the use history information held by said abbreviated word use history storage
unit ("number of Maura"; Hiroyuri et al., paragraph 16, lines 1 – 8).

        As per claim 22, Lekutai in view of Hiroyuri et al., further suggest that the
abbreviated word and the utterance probability of the abbreviated word are registered
into the speech recognition dictionary together with the recognition object, and said
dictionary update unit is operable to revise the abbreviated word by changing the
utterance probability of the abbreviated word ("changing condition of the utterance
probability"; Hiroyuri et al., paragraph 124).

Conclusion

5.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to LEONARD SAINT CYR whose telephone number is

(571) 272-4247. The examiner can normally be reached on Mon- Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone

number for the organization where this application or proceeding is assigned is (571)-

273-8300.

Information regarding the status of an application may be obtained from the

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LS
07/10/09

/Richemond Dorvil/
Supervisory Patent Examiner, Art Unit 2626